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Biological Laboratory. 'A Preliminary Report on Trypanosomiasis of Horses in the Philippine Islands,' by W. E. Musgrave, M.D., and Norman E. Williamson.

Serum Laboratory. 'Preliminary Report on the Study of Rinderpest of Cattle and Carabaos in the Philippine Islands,' by James W. Jobling, M.D.

Biological Laboratory. 'Trypanosoma and Trypanosomiasis, with special reference to Surra in the Philippine Islands,' by W. E. Musgrave, M.D., and Moses T. Clegg.

I. 'New or Noteworthy Plants.' II. 'The American Element in the Philippine Flora,' by Elmer D. Merrill, botanist.

Chemical Laboratory. 'The Gutta-percha and Rubber of the Philippine Islands,' by Penoyer L. Sherman, Jr., Ph.D.

'A Dictionary of the Plant Names of the Philippine Islands,' by Elmer D. Merrill, botanist.

Biological Laboratory. 'A Report on Hemorrhagic Septicæmia in Animals in the Philippine Islands,' by Paul G. Woolley, M.D., and J. W. Jobling, M.D.

Biological Laboratory. 'A Report on Two Cases of a Peculiar Form of Hand Infection, due to an Organism resembling the Koch-Weeks Bacillus,' by John R. McDill, M.D., and Wm. B. Wherry, M.D.

Biological Laboratory. 'Preliminary Bulletin on Insects of the Cacao,' by Charles S. Banks, entomologist.

Biological Laboratory. 'Report on Some Pulmonary Lesions produced by the Bacillus of Hemorrhagic Septicæmia of Carabaos,' by Paul G. Woolley, M.D.

Biological Laboratory. 'A Fatal Infection by a hitherto undescribed Chromogenic Bacteria-Bacillus Aureus fetidus,' by Dr. Maximilian Herzog.

I. Serum Laboratory: 'Texas Fever in the Philippine Islands and the Far East,' by J. B. Jobling, M.D., and Paul G. Woolley, M.D.

II. Biological Laboratory: 'On the Australian Cattle Tick—*Boophilus Australis*,' by Chas. S. Banks.

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SCIENTIFIC BOOKS.

The Nature of Man; Studies in Optimistic Philosophy. By ELIE METCHNIKOFF. English translation, edited by P. CHALMERS MITCHELL. 1 vol. in 8°, pp. xvi + 302, with author's portrait and twenty illustrations. New York and London, G. P. Putnam's Sons. 1903.

In 'The Nature of Man,' Elie Metchnikoff, a Russian professor at the Pasteur Institute, in Paris, presents a valuable contribution to scientific philosophy.

The book is addressed to 'disciplined minds, and especially to biologists.' It is not, the author states in the preface, so much a finished study as food for further thought and investigation, a program of work. But it reaches beyond this. It deals principally with the numerous imperfections and disharmonies in the human constitution and functions, with old age, with the vital instincts and with death.

Man is a comparatively recent and possibly accidental descendant of some anthropoid ape and has differentiated from his ancestors principally through his brain. There are many parts of his constitution that have not kept the same pace in evolution; as a result, man's organism is not throughout harmonious and equally adapted to his present circumstances, which affects adversely his health, happiness and duration of life.

Man is still covered with hairs, though they are no longer needed or capable of protecting his body from cold, and their follicles offer easy lodgment to microbes, which give rise to acne, or even worse forms of skin affection.

The wisdom teeth furnish an instance of disharmony. They are not only nearly useless, but often become a source of trouble that in exceptional cases leads to disease or even death.

The vermiform appendage is another organic disharmony, serving no useful purpose, but often the source of great disorder and danger to life.

Degenerating organs in the human body, such as the cæcum, exhibit disharmony. In fact, the whole of our large intestine is largely superfluous. It is of secondary importance to

digestion and absorption. The loss of a large part of it could easily be endured by man. On the other hand, it is a source, through autointoxication, and diseases peculiar to it, of much danger to man's health and life.

There are disharmonies in our organs of sense, and, particularly, in the organs and functions of reproduction; and there are disharmonies in our instincts as well.

Senility should be a natural, physiological phase of man's existence, but as it exists, it is to a large extent a pathological condition. The fundamental organic change in senility is the atrophy of the higher and specific cells of our tissues and their replacement by hypertrophied connective tissue. A very important destructive rôle in the process is played by the cells known as macrophags. The degeneration of the higher cellular elements and facilitation of the work of the macrophags is aided by all agencies that weaken the organism. Among such stand foremost the poison of syphilis, alcohol and the products of intestinal fermentations.

As to death, we are so accustomed to look upon it as something natural and inevitable, that it has long since come to be regarded as inherent in organisms. This has been disproved by biology. Low, particularly unicellular, organisms, are not subject to the natural death that comes inevitably to man and higher animals. There are even somewhat higher organisms, such as many polyps and some worms, to which natural death does not come; these animals divide indefinitely into new individuals. Hence, death is not necessarily inherent in living organisms. Even our own bodies contain elements practically immortal, the spermatozoa and ova. Natural death in man is probably a possibility rather than an actual occurrence. Old age, as it exists, is not a true physiological process, but exhibits many morbid characters. That being the case, it is not surprising that it seldom ends in natural death.

Would the appearance of natural death in man be accompanied by the disappearance of the instinct of self-preservation and the appearance of another instinct—that of death? To this the author has no exact answer; yet he

adduces some testimony favoring that view. It is well known that the instincts of hunger, thirst, movement, etc., allied to those of desire of life and fear of death, often change with age. The instinct of death seems to lie, in some potential form, deep in man's nature. If human life followed its ideal course, fulfilling all its physiological functions, then the instinct of death would appear in its time, after a normal life and an old age healthy and prolonged. As it is, old men die in morbid old age and in the fear of death, without having known the instinct of death, and this constitutes the greatest disharmony of human nature. The goal of existence is the accomplishment of a complete and physiological cycle, in which occurs a normal old age, ending in the loss of the instinct of life and the appearance of the instinct of death. The normal end, coming after the appearance of the instinct of death, may truly be regarded as the ultimate goal of human existence. But before attaining it a normal life must be lived: a life filled all through with the feeling that comes from proper accomplishment of function.

What is to be done? Before all things, it is necessary to try to amend the evolution of human life; that is to say, to transform its disharmonies into harmonies. This can be undertaken only by science, and to science the opportunity of accomplishing it must be given. We must know the human constitution thoroughly, must understand the most intimate details of its mechanism. In the problem of his own fate, man must not be content with the gifts of nature; he must direct them by his own efforts. Just as he has been able to modify the nature of animals and plants, man must attempt to modify his own constitution, so as to readjust its disharmonies.

As will be plain from this brief reference, Metchnikoff's '*Nature of Man*,' notwithstanding its slightly misleading title, is a dissertation on some of the most important phases of man's natural history. It is a work remarkable for its simple language and clear style. It is not, as the author admits, a finished work, but it is a well advanced one.

There are a few points which are open to

argument, especially that of the significance among mammals of the large intestine.*

But on the whole the work bears the stamp of a production of an erudite scientist and a deep thinker.

ALEŠ HRDLICKA.

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Die Chemie der Zuckerarten. Von Professor Dr. EDMUND O. VON LIPPMANN, Director der Zuckerraffinerie Halle zu Halle a. S. Dritte völlig umgearbeitete Auflage. 1904. Braunschweig, Friedr. Vieweg und Sohn. Gr: 8vo. Pp. xl+2003. In two volumes. Price, M. 30; bound, M. 34.

This work, the third edition of the prize essay 'Die Zuckerarten und ihre Derivate,' which first appeared in 1878, embodies the sum total of our present-day knowledge of the sugars.

So great has been the progress made and the wealth of material accumulated in this field of research within the past decade that the contents of this work fill fully two thousand pages; for the sake of convenience the publication is issued in two volumes.

The first of these volumes contains the introductory remarks, a copious table of contents and a full discussion of the monosaccharides. The second treats of the di-, tri- and tetrasaccharides, the constitution, configuration and synthesis of the sugars, the relations between the optical, caloric and other physical constants, the origin of the sugars in plants, and of the physiological importance of the sugars. In addition to this there are the addenda, bringing the discussion of the subject matters up to the close of February, 1904; an author's and a subject index—the latter alone covering about fifty pages.

When one recalls the various domains of knowledge with which the chemistry of sugar is necessarily in touch and contact, for instance general, organic, analytic, physical, physiological, medical, pathological chemistry,

* Metchnikoff considers that, in the active mammalian life, 'the need to stop in order to empty the intestines would be a serious disadvantage' and implies that this factor may have had influence in the evolution of the organ.

the chemistry of foods, of fermentation, bacteriology, agricultural chemistry, physics, etc., a faint conception may be formed of the gigantic task which confronted the author in his endeavor to deal adequately with his subject.

Of course, certain limits had to be set, the lines of demarcation had to be drawn somewhere, and of this no one could have been more clearly conscious than the author. With a modesty as charming as it is rare, he states in his preface: 'Completeness could not be attained in any direction,' and yet this work is the most thorough of all works ever published on the chemistry of the sugars.

The fundamental idea governing its whole scope and plan is the giving of a detailed description of the various kinds of sugars and their more immediate derivatives, while less closely allied bodies receive attention only to an extent necessary to define and establish their characteristics.

Instead of entering into a detailed account of the well-nigh innumerable methods of analysis and technology, the author has sought to give their essence and spirit, to sketch in clear outlines their underlying principles. Data relating to the construction and manipulation of polariscopes, to the specific gravity of sugar solutions, etc., data which can readily be found in manuals and text-books, have been omitted.

Scheibler's naming of the sugars has been retained, the author deeming the time not yet come for the adoption of Emil Fischer's rational system of nomenclature. A noteworthy feature of the book is the manner in which the table of contents and the index complement each other, the former referring to the general topics, while the index lists the individual chemical terms and expressions.

Space, of course, forbids here entering upon a detailed review of these volumes; all that may be done is to sum up in a few words the impression left by a careful, critical examination of their pages. The style in which the book is written is attractive—concise, clear, forceful. There is no question but that von Lippmann in his 'Chemie der Zuckerarten' has given to chemical science a monograph